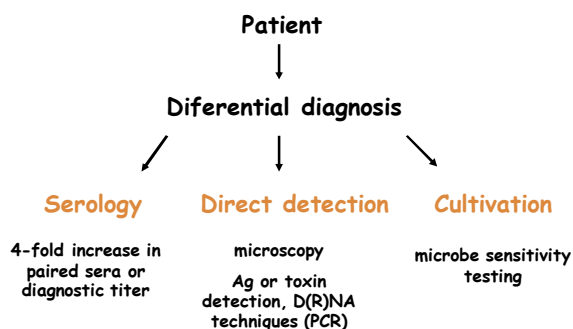
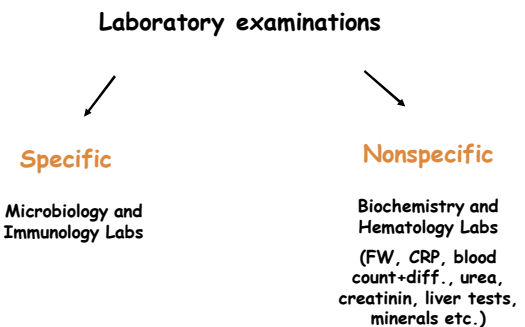


Laboratory diagnostics in infectology



Collection & transport of samples

CRITICALLY IMPORTANT!!

Legionella pneumophila - sputum? BAL?
C) urine for Ag detection

ALWAYS PRIOR ADMINISTRATION OF ATB THERAPY

SUFFICIENT AMOUNT OF MATERIAL

Ag detection

- Useful for rapid test results
- Easy to perform
- False negatives in immunocompromised patients (HAV outbreak)
- Stool rotavirus, nasal RSV, throat group A streptococcus

Ag detection

EIA (enzyme immunoassay)

- good sensitivity and specificity
- detection of bacteria incl. toxins, viruses, fungi and parasites

Latex agglutination - CSF (Strep. pneumoniae, Strep. group B, H. influenzae, N. meningitidis, Cryptococcus neoformans)

Molecular biology methods

PCR

- trained and skilled staff
- bacterial infections: *N. meningitidis*, *M. tuberculosis*, *Strep. pneumoniae*, *Listeria monocytogenes*
- viruses: *HSV 1,2*, *CMV*, enterovirus, *EBV*, parvovirus B19
- often false positive and negative results
- real-time PCR reduces disadvantages

Serology

- Acute testing may have poor sensitivity
- Convalescent testing difficult to interpret
- Acute AND convalescent testing is "gold standard" for many infections; 4-fold rise in antibody titer.
- Measure IgM and/or IgG
- Generally easy to perform

Non-specific tests

- **FW, CRP** – increased in bacterial infections, but also in many non-infectious diseases (AI, tumors)
 - slight increase in viral infections
 - appropriate for the management of therapy
- **blood count** – numbers of WBC, RBC, thrombocytes + Hb, Hct
 - lymphocytosis vs granulocytosis

Blood count in infectious diseases

leukocytes, erythrocytes, Hb, Hct, thrombocytes

Differential

- lympho, mono, granulo

Changes in blood count are caused by:

- direct effect of pathogen
- underlying disease, chronicity
- drug effects

Blood count in infectious diseases – contd.

Neutrophilia

- bacterial infections

Eosinophilia

- infections due to parasites
- reactive during severe infections
- non-infectious cause

Blood count in infectious diseases – contd.

Lymphocytosis (>4000/microl)

reactive in virosis, TBC, lues, pertussis

Lymphocytopenia (<1500/microl)

therapy with steroids, TBC, HIV

Thrombocytosis

Kawasaki syndrom

Thrombocytopenia

malaria, drug-induced (trimetoprim), AI

Imunology examinations

- **Ig concentrations**
 - higher incidence of the infections with encapsulated bacteria in hypogamaglobulinemia
 - higher incidence GIT and resp. infections in IgA deficiency
- **lymphocyte subsets (cellular immunity)**
 - HIV+ infection, sepsis etc.
- **phagocyte function tests (macrophages, PMN)**
 - if impaired, then ↑ incidence Staph. aureus
 - Strep. pyogenes, E. coli, Klebsiella sp. infections

Take-home message

Physician has to know:

- the principle of a test
- why is indicating a given test
- to interpret results

Sample collection prior antibiotics!